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Human Anatomy and Physiology I (Laboratory)

Cecilia Ortiz

CUNY La Guardia Community College

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Designing Information Assignments for Literacy

Name: Professor Cecilia Ortiz

Course Name: Human Anatomy and Physiology I (Laboratory)

Activity Duration: 20 minutes

Activity Learning Objectives:

- a. Objective 1: Evaluate the student's understanding of Particle movement after a class presentation

Description:

After reading a clinical case students have to answer on the e-portfolio some questions. Students will be able to understand and do the following:

1. For osmosis and different types of diffusion, describe the mechanism by which movement occurs, the energy requirements, and the types of molecules that move.
2. Compare and contrast the effects of hypertonic, isotonic and hypotonic conditions on cells.

Materials and Resources

- The students can use as a guide their Lab manuals and class notes.

Case Module:

Anita and Kris were both doctoral candidates working on their advanced degrees in medical chemistry at the university. Neither could think of anything that they were working on their labs that Kris could have been exposed to that would cause his symptoms, especially his pill-rolling tremor. Kris did not take any medications regularly, except to treat an occasional headache or minor injury. Kris continued to drift in and out. His arms and legs seemed to freeze, or lock in place, so he was unable to move at times. A few days ago he was a busy college student, and now he looked like an elderly man suffering with end-stage Parkinson's disease. Dr. Alvarez decided to admit Kris to the university hospital under the care of neurology service for observation and await the results of his blood toxicology lab work.

One of the preliminary toxicology labs came back positive for the meperidine, a painkiller that has sedative properties. This was an unexpected finding, although Kris was nodding off and was disoriented when he arrived in the emergency department. When confronted with the information from the screening test, Kris admitted to taking what he thought was ecstasy at a club a few days before his symptoms appeared. Both Kris and Anita stated that they had taken ecstasy at clubs occasionally over the last few months. They denied ever taking meperidine or anything else.

Questions:

1. What kind of transport is used by these substances: meperidine, ecstasy?
2. Ecstasy overdose can cause dehydration; in which water content in body fluids such as blood plasma is reduced. (a) Define tonicity and isotonic, hypertonic and hypotonic solutions. (b) If Kris was dehydrated, what would you expect to happen to his red blood cells? (Hint: define how solute concentration affects osmosis and osmotic pressure)